"The transformative approach to improving agricultural sustainability... would facilitate the adoption of production approaches that capitalize on synergies, efficiencies, and resilience characteristics associated with complex natural systems and their linked social, economic, and biophysical systems."

New markets, new policies, new research

Source: Toward Sustainable Agricultural Systems in the 21st Century. National Research Council, 2010.

Framework Concept

Recognize Effects across the Full Food System

Choose
Appropriate
Methods for
Analysis and
Synthesis

Consider
all Domains
& Dimensions
of Effects

Account for System Dynamics and Complexities

Food Supply Chain

- Inputs and Production
- Processing and Distribution
- Consumption and Waste

Context

 Biophysical, Social, Institutional

Domains

- Health, Environmental, Social, Economic
- Trade-offs

Dimensions

Quality, Quantity,
 Distribution, Resilience

Heterogeneity

- Human and Biophysical
- Interdependence

Dynamics

Feedbacks and Adaptation

Key Drivers

Data, Metrics, and Methods

- Assumptions and Boundaries
- Synthesis and Interpretation
- Stakeholder Engagement

Future Research Needs

- Integration across multiple jurisdictions, sectors, and disciplines
 - Community-based research agenda
 - Pathways for transformation



Future Research Needs

1. Integration

- 2. Scaling out and up
- Urban / rural metabolic flows
- Scale-appropriateness



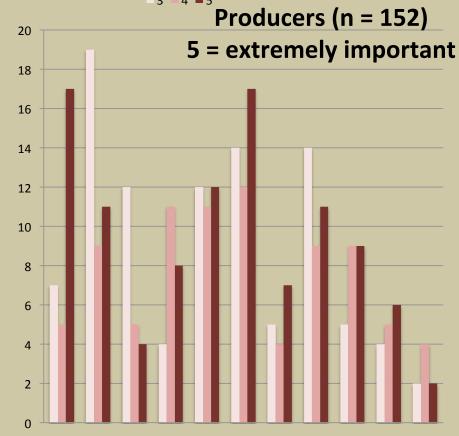
Future Research Needs

- 1. Integration
- 2. Scaling out and up
- 3. Innovative transboundary *governance* structures



Food Hub Survey





Access to rent buy more land vase storage more truck delivery More processing infra Bus Dev't Assistance More farm workers consumer education COST OF HEATING FUE! Unsure of demand



Agroecology

Integration

Agroecological farms / research collaborative / farmer-led network; demonstrates, animates, trains, monitors, certifies and advocates; training shared practices / workshops, comparative research, EGAS

Scale

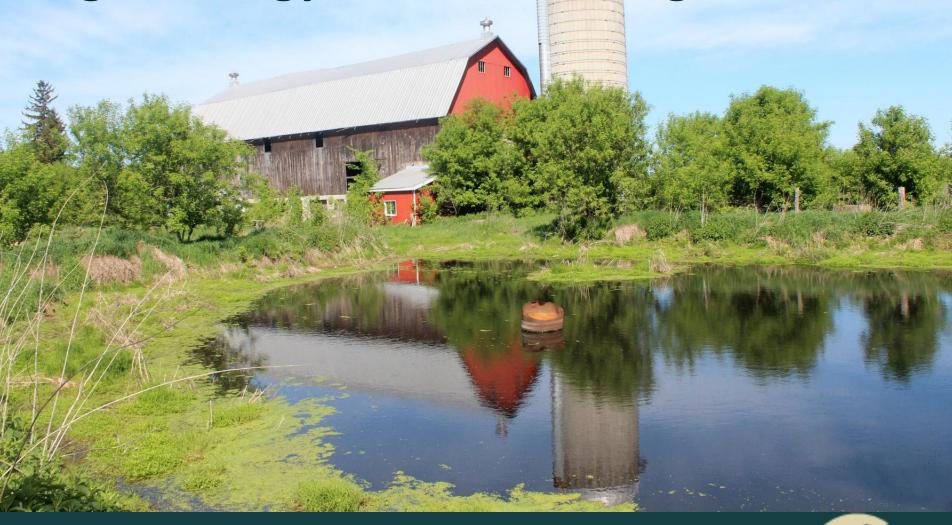
South-north knowledge transfer through workshops—including August 2016 following World Congress of Rural Sociology (Toronto)

Innovative Governance

Co-op, private sector farmers partnering through int'l network; collaborative distribution and retail; ALUS; participatory certification



Agroecology: S N knowledge transfer

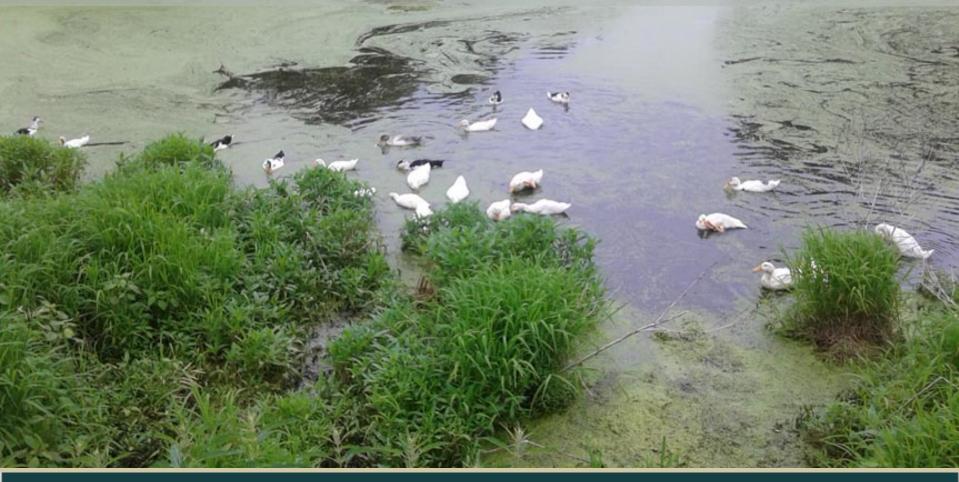








Integrated livestock farming systems





Intensive, diverse crop production





Food Share

Increasing Access, Knowledge and Consumption of Vegetables and Fruits through Community-led Projects





FoodShare

Integration

Non-profit hub food centre demonstrates, animates, trains and advocates through produce distribution, growing, cooking and school programs

Scale

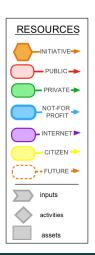
From 40 boxes in 1994 to selling \$2.1 million produce through the Good Food Program in 2014

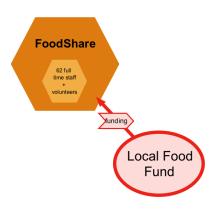
Innovative Governance

New third sector supply chain, partnering with private and co-op sector farmers and distributors

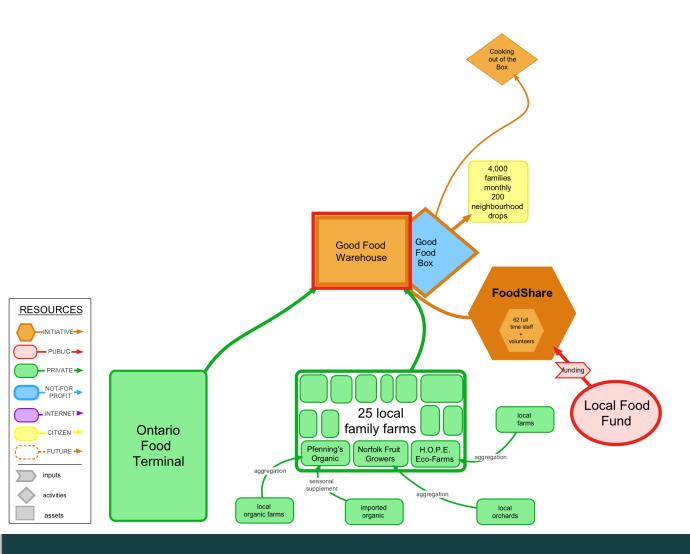




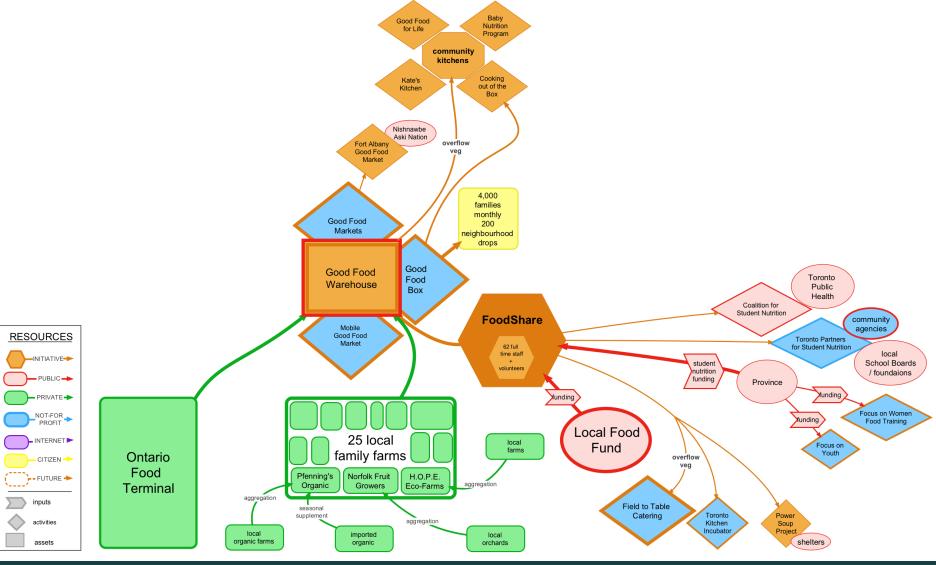




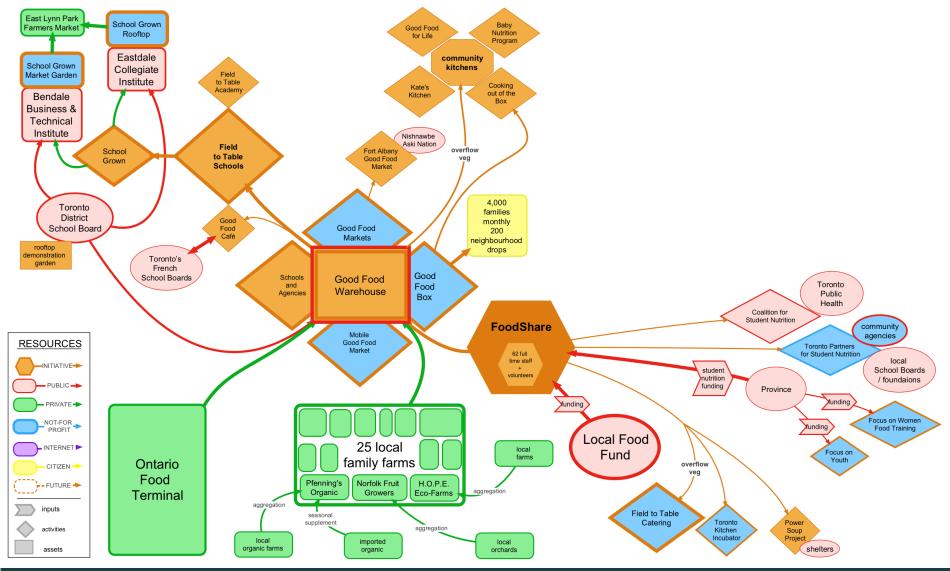




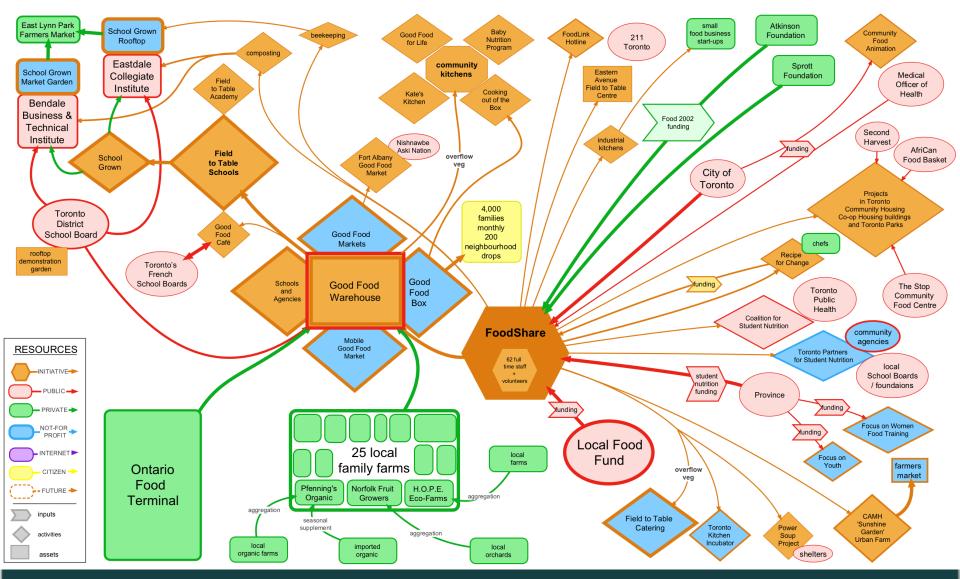














Project SOIL

Shared Opportunities on Institutional Lands





Project SOIL

Shared Opportunities on Institutional Lands

- Integration
 - Food / Health
 - Value of non-economic benefits
- Scale
 - Demonstration, replication, interscalar
- Innovative governance
 - Public sector land and resources



Integration, Scale and Governance

The Challenges of Food Systems Research

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